

# Cabinet – Yaak Grizzly Bear Recovery Monitoring

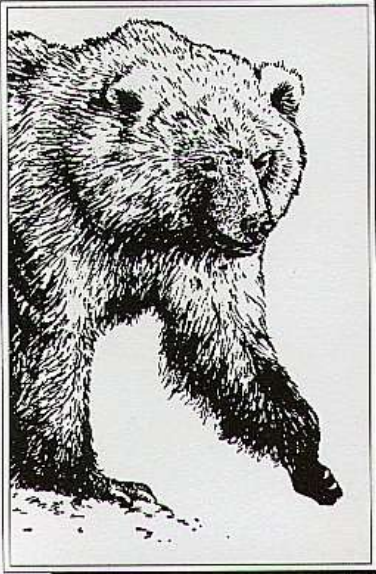
Wayne Kasworm, Tom Radandt, Justin Teisberg, USFWS

- Background
- Cabinet Mountains Augmentation
- Biological constraints on connectivity
- Connectivity of Cabinet-Yaak to other populations
- Management to support Connectivity
- Mortality





# GRIZZLY BEAR RECOVERY PLAN



## Cabinet-Yaak and Selkirk Recovery Targets

Population of about 90 -100 bears,  
judged by the Number and  
Distribution of Females with cubs,  
Human-caused Mortality limits.  
Populations need to be linked to  
other populations.





# Cabinet-Yaak Grizzly Bear Recovery Area

- Northwest MT and North ID
- 2600 SQ Miles 90% public land
- No National Parks or large designated Wilderness
- Cabinet Mountains portion between Kootenai and Clark Fork Rivers
- Yaak River to the North Adjacent to British Columbia
- Two different stories







# Cabinet Mountains Management Conclusions & Recommendations from Research 1983-88



- Population may be  $< 15$  individuals
- Little observed reproduction
- High mortality rates
- No observed movement or linkage to or from other populations
- Recommend population augmentation, mortality reduction, increased habitat security

Kasworm, W. F. and T. L. Manley. 1988. Grizzly bear and black bear ecology in the Cabinet Mountains of Northwest Montana. Montana Department Fish, Wildlife, Parks, Helena.

# Public Involvement

- Prepare an Environmental Assessment in 1988 with Two Main Action Alternatives: 1. Augment with 8 bears, 2. Crossfostering with black bears
- Significant public opposition
- Postpone program for one year and engage a stakeholders group
- Eliminate crossfostering
- Conduct a test of the technique with 4 bears
- Return to Stakeholders group with results and determine future action



# Cabinet Mountains Augmentation Test Criteria



- Bears will be independent females prior to first reproduction
- Bears must have no history of human conflicts
- Bears will be backcountry animals
- Bears will be moved in mid-summer
- Bears will come from areas of similar habitat and foods

# Success Criteria for Test of Augmentation

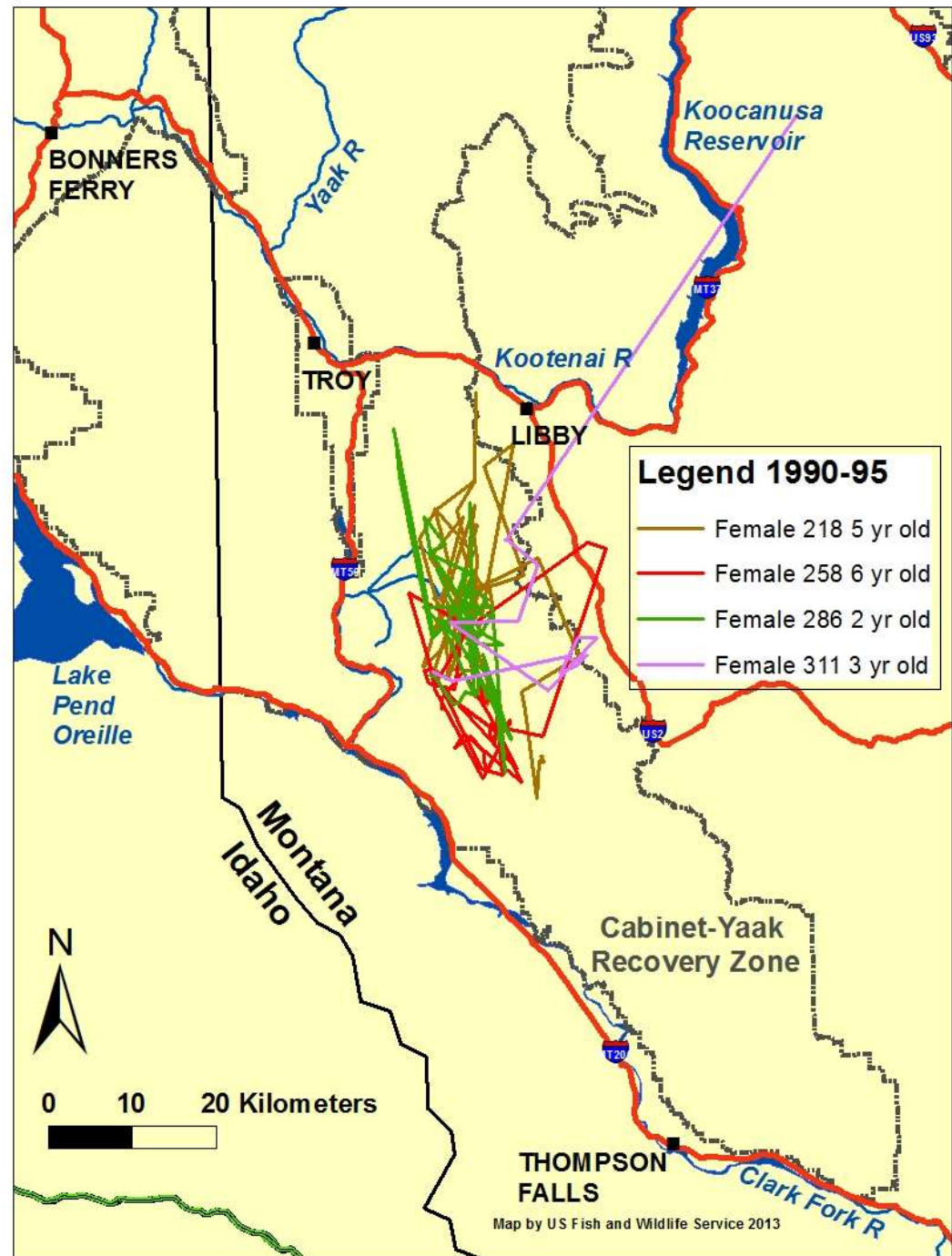
- TRANSPLANTS  
MUST STAY WITHIN  
THE TARGET AREA  
FOR AT LEAST ONE  
YEAR
- TRANSPLANTS  
SHOULD  
ULTIMATELY  
REPRODUCE WITH  
NATIVE MALES





# Test Results

- Bears captured in NF of Flathead River in SE BC by USFWS
- 3 of 4 female bears remained in target area for at least 1 year
- 1 bear left target area, but was captured and returned
- One bear produced a cub but both died
- All bears lost radio collars by 1996
- Trapping and hair snag from 1997-2004





# HAIR SNAGGING FOR GENETIC ANALYSIS

2004 – identify bear 286 as  
present and she reproduced



Kasworm, W. F., M. F. Proctor, C. Servheen, and D. Paetkau. 2007. Success of grizzly bear population augmentation in northwest Montana. *Journal of Wildlife Management* 71:1261-1266



# Phase Two of Augmentation, 2005

- Convene stakeholders committee with results
- Augmentation became a cooperative effort with MFWP capturing animals in the Flathead River drainage and USFWS monitoring animals
- Since 2005, eighteen additional bears added to the Cabinet Mountains (10 Females, 8 Males)





# Cabinet Mountains Grizzly Bear Augmentation

- Add 22 bears since 1990
- 14 females and 8 males
- 8 bears left the target area, but 3 returned
- 6 bears are known dead (2 natural, train, illegal, mis-id, defense)
- 2 females and one male are known to have reproduced





# Genetic Sampling

- Hair samples from captures, rub trees and corrals with cameras
- We get species, sex, individual genotype, and parentage
- Document gene flow and effective linkage in support of recovery for both Cabinet-Yaak and Selkirk





# Augmentation Grizzly Bear DNA Family Tree for the Cabinet Mountains

DNA relationships for grizzly bears in the Cabinet Mountains from 1990 through 2018

(\* Bear 286 was the augmentation bear placed in the Cabinet Mountains in 1993, Bear 782 was released in 2006, Bear 723 was released in 2011)

Pink Circles = Females  
Blue Boxes = Males

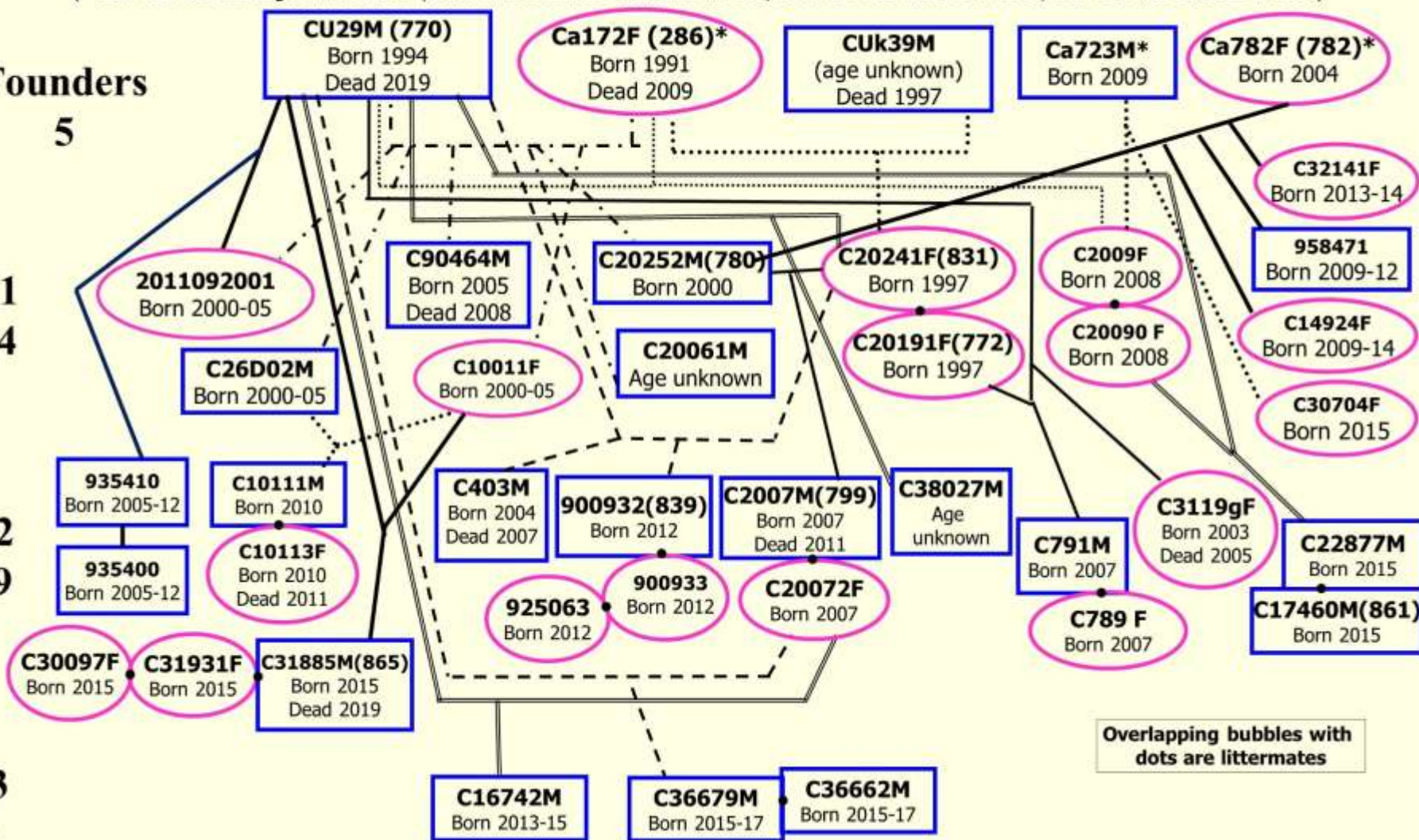
Founders

5

F1  
14

F2  
19

F3  
3

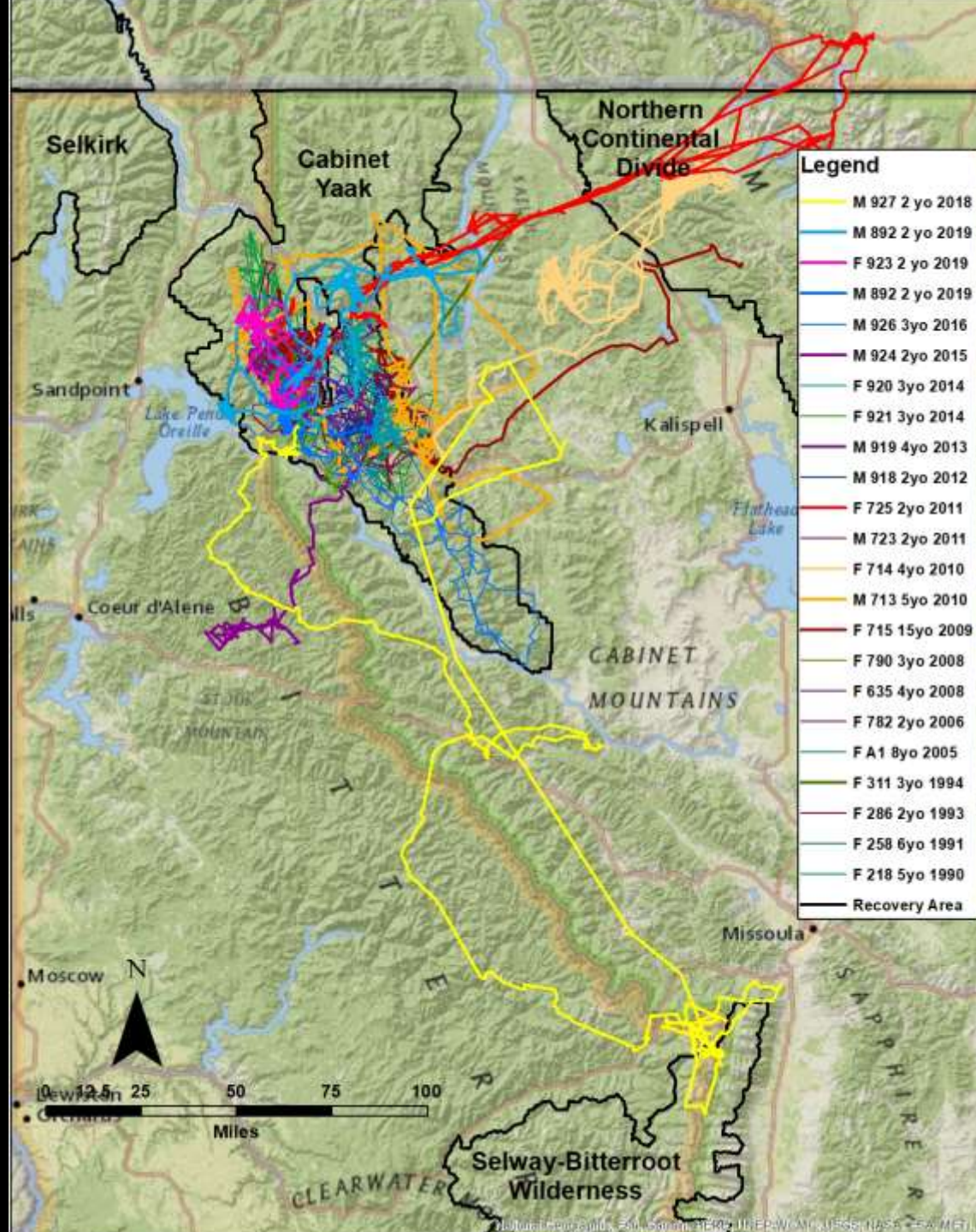




# Cabinet Mountains Grizzly Bear Augmentation 1990-2019

Not an example of connectivity

- Bears not getting to Cabinets except in back of a pick-up truck
- Successful genetic connectivity requires gene flow from large population to small





# Augmentation Results



- Eliminate bears with < 1 year of data and bears that were killed on study area in < one year
- Small sample  $N = 18$   
13/18 stay = 72%
- Female vs Male ?  
8/11 F stay = 73%  
5/7 M stay = 71%

# Conclusions

- Cabinets population  $\pm 6$  bears in 1990
- Current Cabinets population 25-30
- Augmentation is the main reason we still have grizzly bears in the Cabinet Mountains
- No detections of other bears getting to the Cabinets naturally and surviving to reproduce
- Recommend continuing the program at a slow but steady pace
- However : They don't all stay where you put them and they don't all live





# Telemetry and Genetics provide insights into population expansion and connectivity

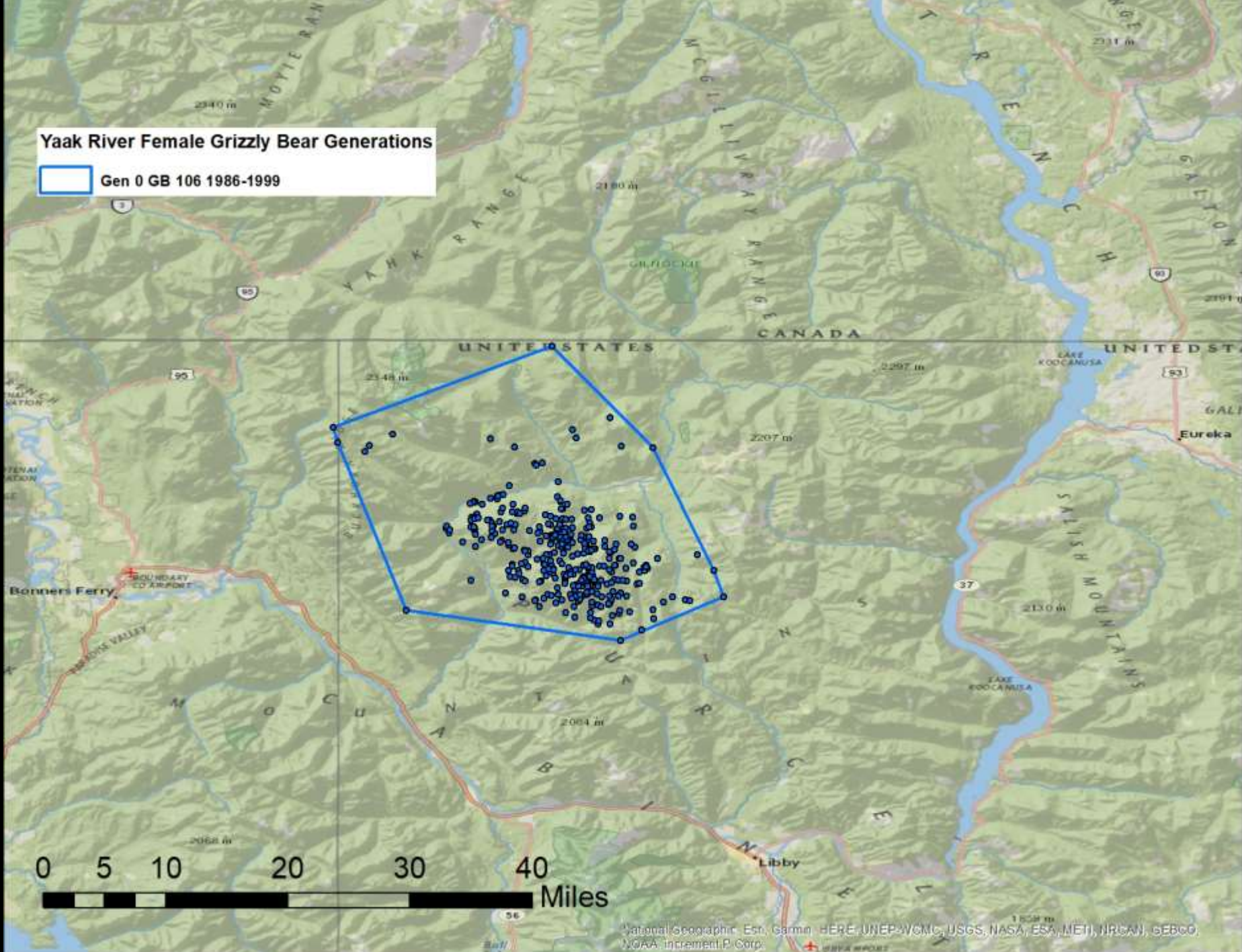
- Connectivity often occurs with dispersing young moving to new territory
- Young males often tend to move long distances away from natal range
- Young females tend to adopt home ranges that are part of or adjacent to natal range
- An example from the Yaak River





# Yaak River Female Grizzly Bear Generations

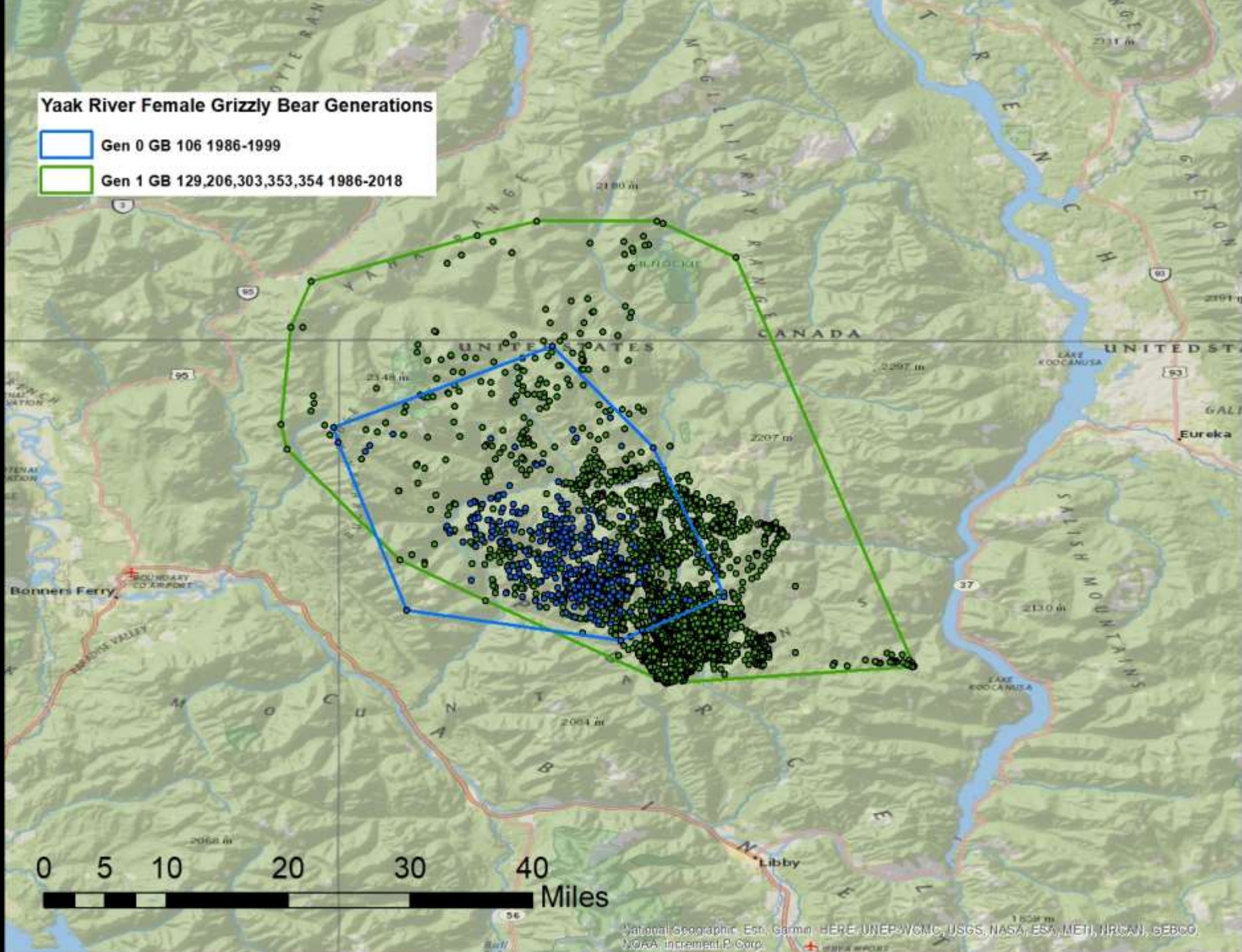
Gen 0 GB 106 1986-1999





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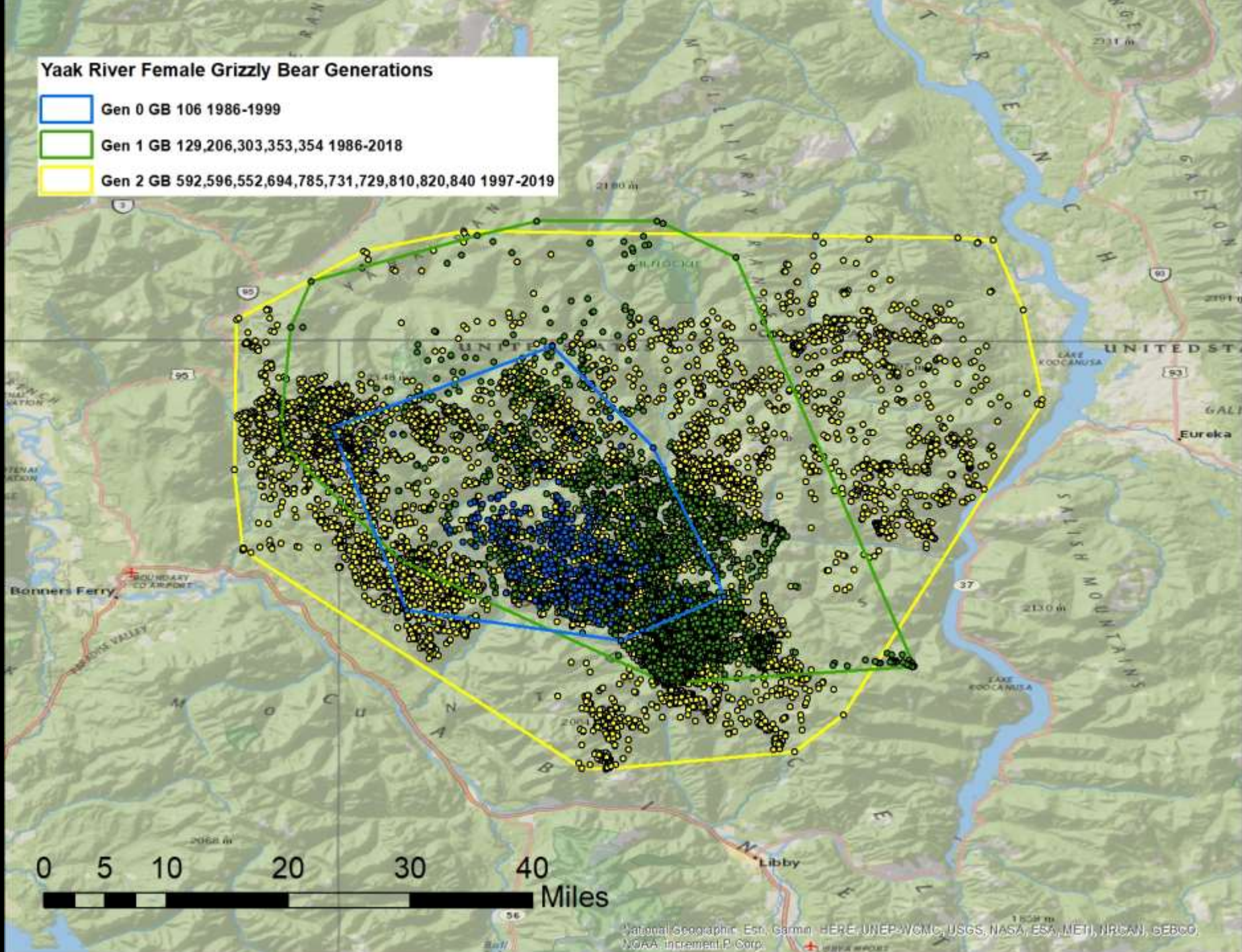
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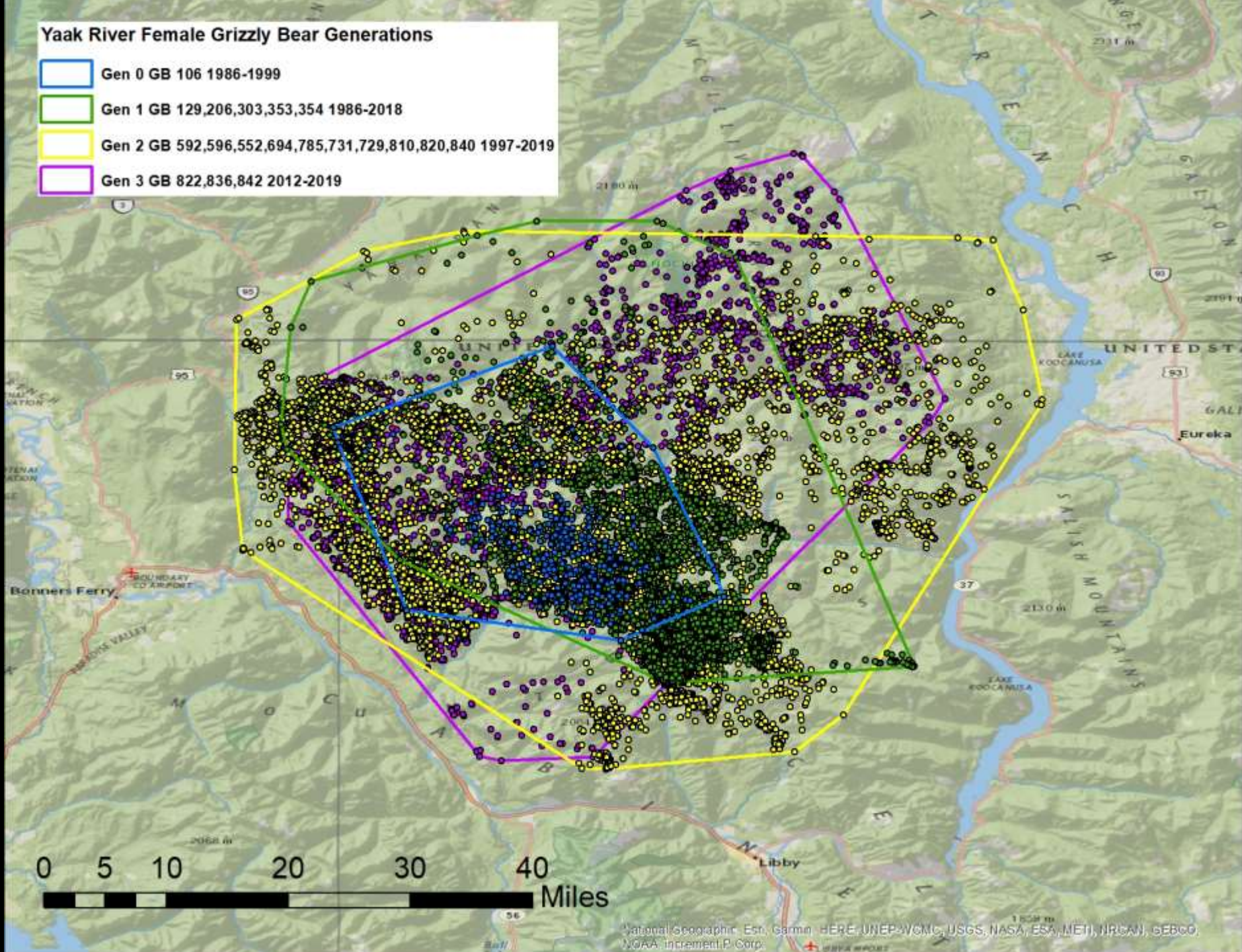
- Gen 0 GB 106 1986-1999
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- Gen 2 GB 592,596,552,694,785,731,729,810,820,840 1997-2019





# Yaak River Female Grizzly Bear Generations

- Gen 0 GB 106 1986-1999
- Gen 1 GB 129,206,303,353,354 1986-2018
- Gen 2 GB 592,596,552,694,785,731,729,810,820,840 1997-2019
- Gen 3 GB 822,836,842 2012-2019





# Connectivity

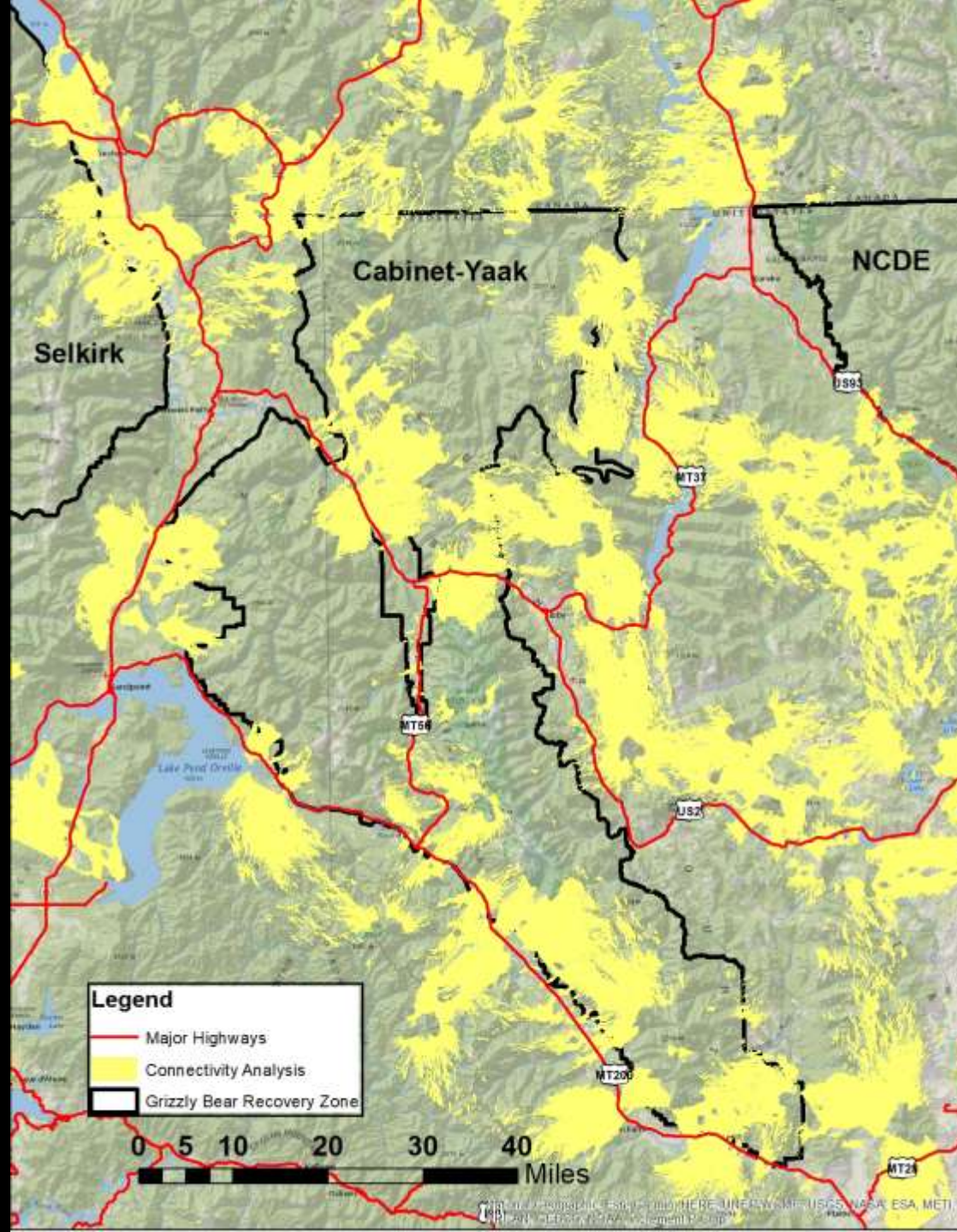
- Lack of connectivity is often a product of highways and human development (roads, residences, structures, campgrounds, etc.)
- Demographic and genetic consequences





# Connectivity

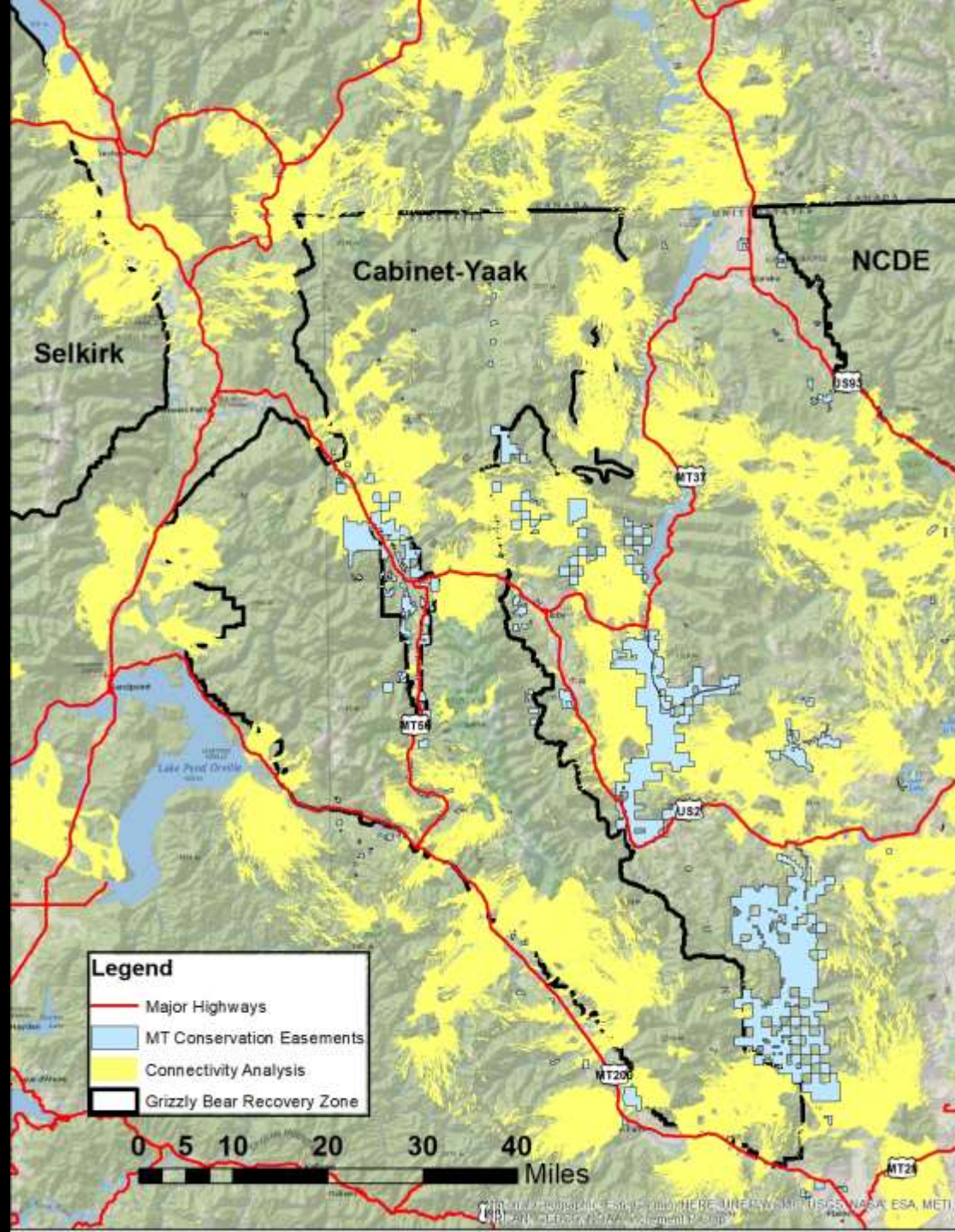
- Use grizzly bear telemetry data and information on human development to predict where highway crossings might occur





# Management in Support of Connectivity

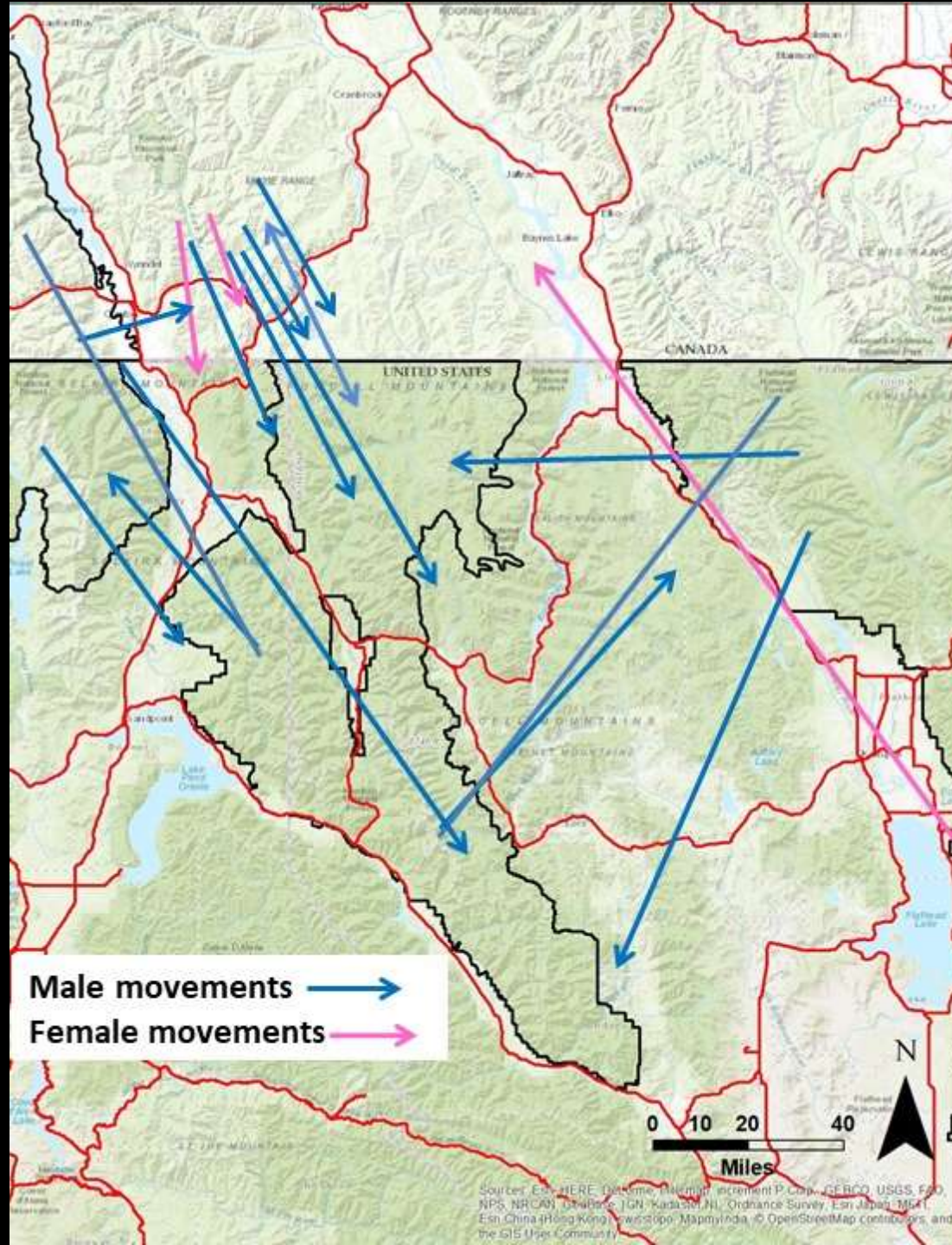
- Conservation Easements and Acquisitions
- Mortality reduction through Conflict Prevention Actions (information, secure attractants, electric fencing, wildlife resistant garbage containers, etc)





# Known Grizzly Bear Movements and Gene Flow into the Cabinet-Yaak

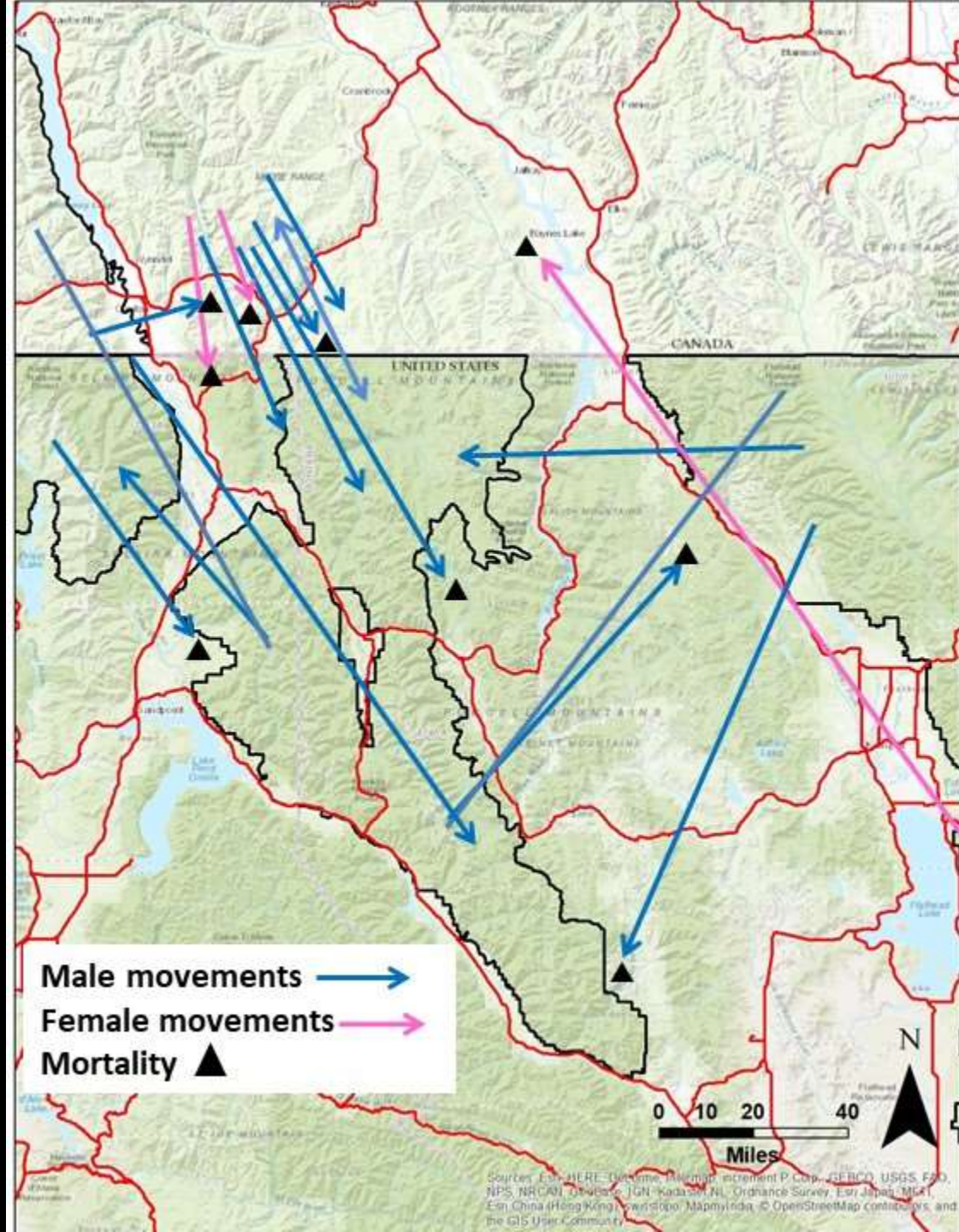
Numerous movements of both males and females into the Cabinet-Yaak have been detected by telemetry and genetics in the last 30 years





# Known Movements and Gene Flow into the Cabinet-Yaak

If mortality occurs  
before reproduction  
the we have not  
achieved gene flow

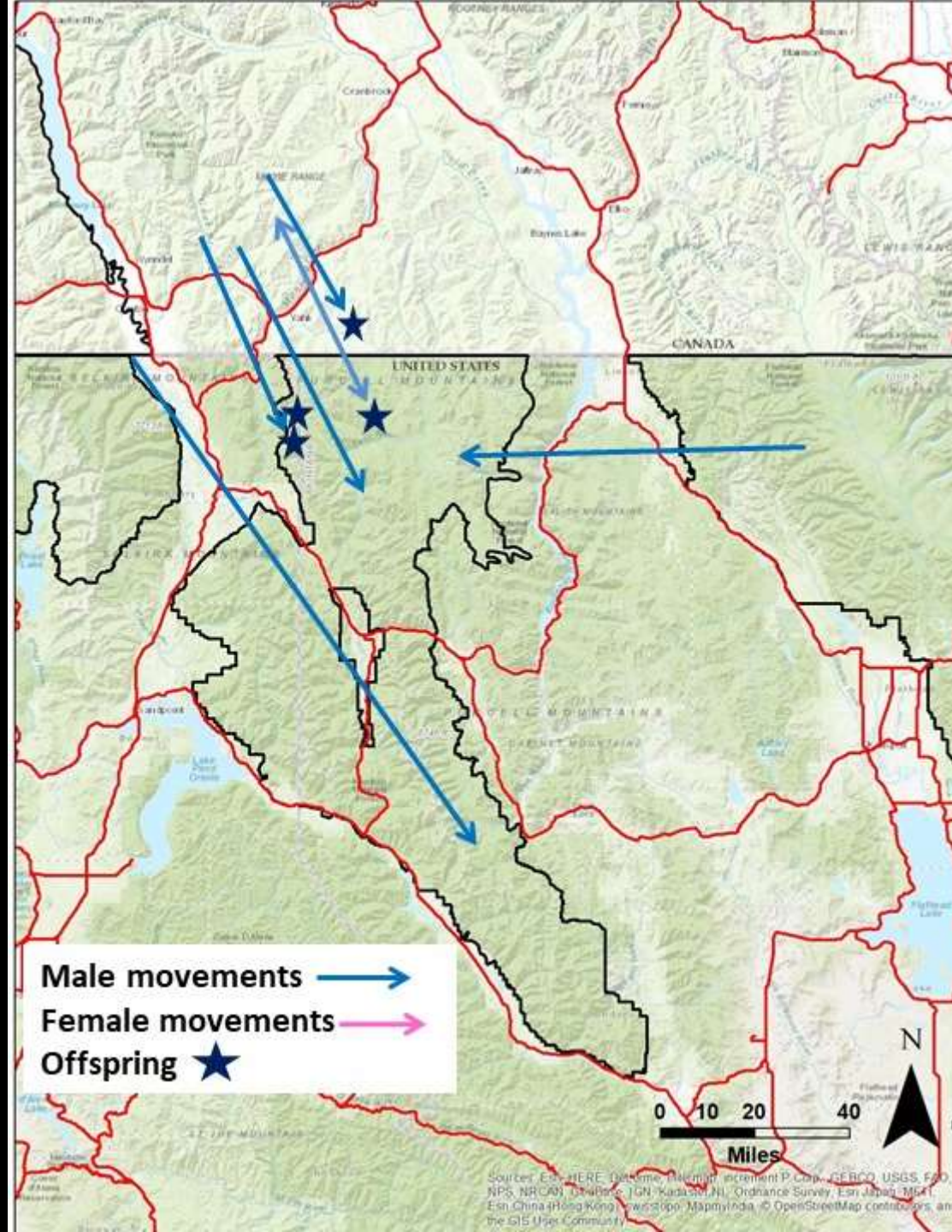




# Known Movements and Gene Flow into the Cabinet-Yaak

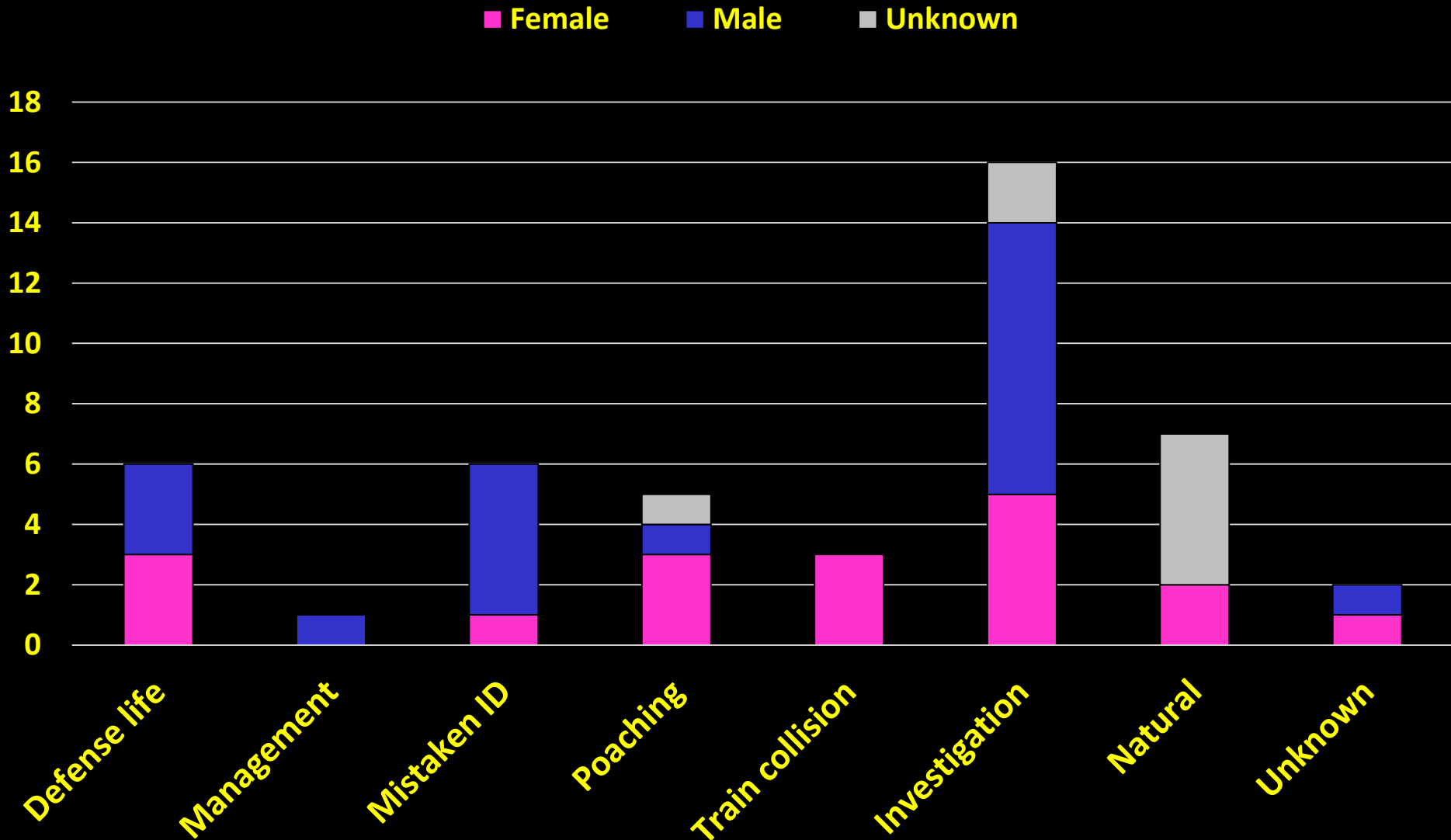
We need movement and  
reproduction to achieve  
gene flow

To do so we need to  
reduce mortality for  
animals that move into  
the Cabinet-Yaak





# Cabinet-Yaak Known and Probable Grizzly Bear Mortality 2000-2019





# QUESTIONS?

Reports found at: <https://www.fws.gov/mountain-prairie/es/grizzlyBear.php>

We wish to extend a special thanks to the citizens of the province of British Columbia for allowing us to remove grizzly bears from the Flathead River drainage to augment populations in the Cabinet Mountains.



Funders: BC Fish Wildlife Compensation Program, BC Habitat Trust Foundation, Columbia Basin Trust, Colville National Forest, Claiborne-Ortenberg Foundation, Mr. E.O. Smith, Federal Highway Administration, Great Northern Landscape Conservation Cooperative, National Fish and Wildlife Foundation, Idaho Fish and Game, Idaho Panhandle National Forest, Kalispell Tribe, Kootenai Tribe of Idaho, Kootenai National Forest, Montana Fish, Wildlife, and Parks, Nature Conservancy Canada, Turner Endangered Species Fund, U.S. Borax and Chemical Corp., Wilburforce Foundation, Yellowstone to Yukon Conservation Initiative, and the U.S. Fish and Wildlife Service